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Is it possible to use universal basic income as an effective tool to fight against poverty? - a theoretical and empirical approach

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**Biographic note:** João António de Araújo Pacheco was born on the 29th of April of 1996, son of José António de Azevedo Pacheco and Almerinda Raquel Vila Real de Araújo, in Senhora da Oliveira's hospital in Creixomil, Guimarães.

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**Resumo:** O objetivo desta tese é analisar o conceito de r.b.u., bem como as suas vantagens e desvantagens e em que medida o r.b.u. pode ser usado como um mecanismo de combate à pobreza. Para cumprir este objetivo, discutem-se os conceitos de r.b.u. e de pobreza e apresentam-se um conjunto de estudos de casos de aplicação prática do r.b.u.

A pobreza encontra-se ligada a uma série de problemas sociais tais como a falta de educação, problemas de saúde (Forget (2011)), violência (Moser and Holland (1987)), criminalidade (Aue, Roosen, and Jensen (2016)), pelo que irão ser analisados também efeitos de externalidades positivas do r.b.u. sobre alguns destes fatores.

Finalmente, recorrendo aos dados da experiência de Manitoba e fazendo uso de uma abordagem econométrica, procuram-se testar empiricamente alguns dos efeitos previstos do r.b.u. sobre a oferta de trabalho, o investimento na educação e a satisfação com o último emprego, funcionando estes dois como variáveis proxy que nos permitem analisar o efeito do r.b.u. sobre o nível de pobreza. Ião ser analisados os resultados por género para verificar se existem diferenças significativas.

Os resultados, apesar de não revelarem uma correlação estatisticamente significativa entre o r.b.u. e os indicadores de interesse, apontam no sentido de o r.b.u. levar a um aumento no número de pessoas na escola e no nível de satisfação com o último emprego. A parte negativa dos resultados prende-se com o facto da existência de um r.b.u. levar a que o número de semanas trabalhadas diminua e que, parte desse efeito, possa não ser explicado apenas com base em pessoas que optaram por aumentar o seu nível de capital humano. Foi observável que os efeitos da introdução do r.b.u. foram diferentes para homens e mulheres. No entanto, tal é devido à diferença entre a percentagem de homens e mulheres a trabalharem.

**Códigos JEL:** I32; I38

**Palavras-chave:** Garantia; Rendimento; Pobreza; Universal

**Abstract:** This thesis goal is to analyse u.b.i.'s concept, as well as its advantages and disadvantages and how can u.b.i. be used as a mechanism to fight against poverty. To achieve such goal, we discuss u.b.i. and poverty's concepts and present a set of case studies of u.b.i.'s practical application.

Poverty is linked to a series of social problems such as the lack of education, health problems (Forget (2011)), violence (Moser and Holland (1987)), criminality (Aue et al. (2016)), so it will also be analysed positive externalities' effects of u.b.i. around some of these factors.

Finally, recurring to Manitoba's experience data and by using an econometrical approach, we try to test empirically some of u.b.i.'s predicted effects regarding job supply, investment in education and satisfaction with last job, being the last two proxy variables that allow us to study the effect of u.b.i. over poverty. There will be analysed results by gender to see if there are significant differences between males and females.

The results, even though they haven't revealed a statistically significant correlation between u.b.i. and the indicators we are analysing, point out that u.b.i. causes an increase in school enrolment and in job satisfaction with last job. The results' downside is that u.b.i. also causes a decrease in the number of weeks worked, that can only be partially explained by people choosing to improve human capital levels. It has been observable that u.b.i.'s introduction effects were different for women and men. However, such difference can be explained because of the difference in the percentage of males and females that work.

**JEL codes:** I32; I38

**Keywords:** Guarantee; Income; Poverty; Universal

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## 1. Introduction

Since the beginning of times that poverty exists, however what has changed is the awareness in the face of poverty. There are multiple types of poverty, being the most debated and uncontrolled one right now is persistent poverty, a phenomenon characterized by the fact that individuals remain poor through several generations, because of the effects of the so-called poverty traps. They may occur because individuals voluntarily take risks hoping to stop being poor, what causes them to sacrifice a part of their already really low wealth that causes them to become even poorer (Sadler (2000)). Another possible cause may be the existence of multiple equilibriums, arising from the fact that households do not have the necessary amounts of resources to recover from a shock (Barrett and Swallow (2006)) or that agriculture sector dominance results in a low equilibrium, that is, will cause poverty to be the equilibrium (Graham and Temple (2006)).

This thesis research question is to find out whether the introduction of an universal basic income could act as a more efficient mechanism of reducing poverty, when compared with the current applied welfare measures.

A state has three basic functions: ensuring equity through redistribution of income, promoting efficiency in allocating resources and regulating the level of economic activity. It has been observed that, due to the higher level of awareness in the face of poverty, the importance of the social state has been increasing, but it is no less true that the level of pressure on the social state has also continually increased. As the *2018 Annual report of the board of trustees of the federal old-age and survivors' insurance and federal disability insurance trust funds* states this puts at risk social security's sustainability and, worse, it shows that despite all efforts enrolled in ending with poverty, even in developed countries such goal was not achieved yet. There is an extensive empirical evidence that shows that the existence of an unemployment benefit leads the duration of unemployment to increase (Card and Levine (2000); Filiz (2017) and Johnston and Mas (2018)) and that family allowance has no significant effect on poverty reduction (Hidalgo-Hidalgo (2018)), which points out that there are more efficient alternative ways for the Social State to fight poverty. Based on this idea that the current applied measures are not as effective as they should be, the concept of an universal basic income (u.b.i) emerges, being this discussion's main goals to find whether its implementation is feasible or not and if it can be an optimal solution, that is, the most efficient one to mitigate poverty levels.

This thesis is organized as it follows: in section 2 it will be done an extensive literature review, where in a first phase the concepts of universal basic income and poverty will be analysed in a broader way, mentioning some of the most common indicators used to measure poverty and to define poverty levels and, in a second phase, it will be analysed the advantages and disadvantages compared with the already existent social measures such as unemployment benefit or social inclusion income. It will also be analysed u.b.i.'s strengths and weaknesses, referring some possible solutions to improve the measure's feasibility. Then, in section 3 it will be made an empirical case studies analysis, seeing what were the (observable) results arising from the implementation of an u.b.i. in countries as different as U.S.A., Canada, Finland, Ecuador, India or Kenya. After that, there will be created some regressions based on the Manitoba's experience, the only one that has put all data available for free in the Internet, and also the first one to be estimated, in order to analyse the effects of the implementation of an u.b.i. on the number of weeks worked, school enrolment and job satisfaction, the last two will be considered as proxies for measuring poverty's evaluation<sup>1</sup>. The idea is to see whether the results observed through the regressions' compilation are in line with those that are predicted by the existent literature.

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<sup>1</sup> For more details see [https://dataverse.lib.umanitoba.ca/dataverse/Mincome\\_Data](https://dataverse.lib.umanitoba.ca/dataverse/Mincome_Data)

## **2. Literature Review**

### **2.1. Exploring the concepts of universal basic income and poverty**

Along this thesis the key concepts will be universal basic income and poverty. Universal Basic Income (u.b.i.) consists on a monetary transfer with periodic character assigned by the state to everyone on an individual basis. Its value is constant and independent of the individual's wealth, having its beneficiary total freedom to decide how they want to spend that income. It is also an unconditional transfer, so it is not necessary for the individual to find himself working or even to show willingness to work, and if he chooses to work, he may accumulate the salary with this additional income<sup>2</sup>. It may be a total u.b.i. if it allows the elimination of poverty and the inclusion of all individuals in society or it may be a partial u.b.i. if, to achieve such goals, it must be complemented by other social redistribution measures.

According with Britannica Encyclopaedia, poverty is defined as a situation where a given individual is not able to satisfy his basic needs. The definition of what is a basic need however is not universally accepted: regarding less developed countries poverty is defined as an individual not being able to meet the survival needs, while to the extent of developed countries poverty is defined as an individual not being able to meet some needs that are fulfilled for most of the population.

Although most people conceive poverty as a general concept there are several types of poverty: Cyclical poverty, for example, occurs when poverty spreads through a given community embracing most of its individuals for a short period of time, either because of the business cycles' effects (Herzer and Klump (2009)) or due to environmental related issues which cause a given country to face scarcity of basic goods (Narloch and Bangalore (2018)). We must note that this type of poverty is the one that is more controlled, with the unemployment benefit, for example, acting as an automatic stabilizer, that is, ensuring people have a new source of income when they lose their jobs and causing expenditure to rise during a recession (Bitler and Hoynes (2016)). Much more dramatic is collective poverty, that is a type of poverty which involves permanent inability for a given group of people to be able to satisfy their basic needs, causing poverty to pass from one generation to the other. This type of poverty occurs mainly in undeveloped countries, either from Africa, Central and South

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<sup>2</sup> For more details see <https://basicincome.org/basic-income/>

America or in some parts of Asia and the main reason why it emerges is that in such countries, even if resources were distributed in a fair way, they would not be enough to meet all the population's basic needs (Cabrera, Lustig, and Morán (2015)). This type of poverty is also called chronic or generational poverty. There must however be noticed that, in developed countries, there is a social exclusion phenomenon that causes some groups of people to be marginalized leading to the creation of areas known as ghettos, where such problems may also occur, being this type of poverty known as concentrated collective poverty (Devicienti and Poggi (2011)). Finally, it must also be mentioned case poverty, which consists on a situation in which, despite the surrounding households being healthy enough to supply all the basic needs, a household or an insignificant percentage in the total number is not able to do so<sup>3</sup>.

Other poverty approach distinguishes between primary poverty, a situation where, even if individuals are able to maximize the utility they can obtain from their income they are still in a situation where they cannot meet their basic needs and secondary poverty, a situation where individuals become poor because they have not spent their income in a wise way, either they have bought luxury goods or they have misinterpreted their needs.<sup>4</sup>

Finally, even the mentioned concentrated collective poverty can be divided into two different situations: rural poverty and urban poverty.<sup>5</sup>

Rural poverty is characterized by situations where the populations tend to be very small and hugely dependent on the primary sector performance. In such areas the low populational level generates low demand levels which causes a vicious cycle of poverty: as people are poor nobody wants to invest and as nobody wants to invest the populations remain extremely poor. In these areas, typically, there are not public transports or good accesses for example which causes them to be unattractive to foreigners (Fisher (2005)).

Urban poverty is characterized by extremely large populations (the opposite situation) and the existence of extremely qualified employment. What usually happens is that the poor people from rural areas decide to move to the largest cities. However, their qualifications are low and most of the job offers require high qualified people. The result will be an excess of labour supply for less qualified jobs, what will result in part of that population finding

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<sup>3</sup> For more details see <https://www.britannica.com/topic/poverty>

<sup>4</sup> For more details see <https://www.economicshelp.org/blog/135495/labour-markets/measures-of-poverty/>

<sup>5</sup> For more details see <https://borgenproject.org/tag/rural-vs-urban-poverty/>

themselves without any means of subsistence, causing them to be faced with a situation of poverty. As these populations tend to grow quickly the result will be that the number of unskilled people along time will continuously increase, generating higher and higher poverty rates. It is worth to mention also that in those areas there are excellent transportation conditions as well as good accesses which cause them to be attractive for foreigners that arrive full of hope and then face the harsh reality, repeating the process over and over (Lucci, Bhatkal, and Khan (2018)).

## **2.2. Some poverty indicators**

Coudouel, Hentschel, and Wodon (2002) state that to be able to define who is poor and who is not, first we need to select one of the many dimensions of an individual's well-being. Then we define our poverty line, that is the threshold below which we will consider a given individual as being poor. Finally, we need to set a poverty measure to be used to report to the population as an all or to a key subgroup.

One of the most common poverty approaches relies on monetary indicators and typically it is selected the income as a proxy to define whether someone is poor or not. However, it makes much more sense to use the levels of consumption as a monetary indicator, as it is possible for us to have extra income besides the one we report but it is impossible for us to have a higher consumption than we report. Besides that, there are a given number of professional activities that have uncertain income, such as the ones linked with agriculture for example but, if we consider the idea that individuals like to smooth their consumption, the fluctuations in their levels of consumption will be much lower than their fluctuations in the level of income. Thus, it is much easier to measure consumption levels than to measure income amounts (Slesnick (1993)). Finally, when measuring consumption levels, it is possible to find out whether individuals can have access to the financial markets or not, what allows us to infer about their past financial situation.

It must be noticed, however, that sometimes we are not able to see how much individuals spend and which kind of goods they buy, and this indicator does not allow us to determine the origin of such income, so the ideal is to analyze both the income and the consumption indicators. Notice that spending on raw materials used to produce a given commercial activity should not be considered neither as income, because, as the gross value-added theory state, do not impact on people's income (first enter as a expense that ought to be deduced from the total sales value) nor as consumption, because the marginal utility people can get from

them before the product transformation is null (Varnavskii (2018), on an international trade application).

In any of the cases, when comparing different types of households, it becomes important to make sure that their different needs require different levels of income: a household A with two small children will need a higher income than a household B with four adults: as so their poverty lines will necessarily be different. Furthermore, it cannot be excluded the existence of economies of scale within a household: no matter how many people live in a given house there is a minimum amount of water or energy that ought to be spent and in a house can live up to a certain number of people without being any lack of space (Ironmonger, Aitken, and Erbas (1995)). The existence of such economies of scale will lead the poverty line for a couple with a wealth of A to be lower than twice the amount that it is defined for an individual with that same level of wealth. Browning, Chiappori, and Lewbel (2013) take their analysis to the next level stating that the existence of such economies of scale will increase the individual's bargaining power, that is, while a given individual may face a high level of pressure in accepting any job offer a set of individuals will not face the same amount of pressure.

The other poverty approaches rely on non-monetary indicators. There are multiple approaches of this type:<sup>6</sup>

- 1) An approach to poverty based on health and nutrition conditions uses indicators such as the average life expectancy at birth, the incidence of a given type of diseases or the incidence of hunger in children for example. However, these indicators, except for the average life expectancy at birth are more commonly used as a measure of absolute poverty rather than relative poverty;
- 2) An approach based on educational attainment is also possible. In this case a comparison between the average observed level of schooling compared with the one the economic theory would predict or analyzing the average level of education simply are widely used measures. It is not uncommon as well to compare academic results. However, as the scales are different and as the methods of teaching also differ between countries the results will tend to suffer from endogeneity bias inference;

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<sup>6</sup>[https://pdfs.semanticscholar.org/1032/1795ff9abc2f47f34c884868b523db85b1dd.pdf?\\_ga=2.50069926.1649529803.1561565644-366696206.1561565644](https://pdfs.semanticscholar.org/1032/1795ff9abc2f47f34c884868b523db85b1dd.pdf?_ga=2.50069926.1649529803.1561565644-366696206.1561565644)

3) An approach that relies on subjective measures of poverty that are determined based on census provided to individuals where they ought to evaluate how they evaluate their situation when compared with the average individual and how they rate the situation of all types of people when compared with the average individual. However, these results can be biased due to the existence of discrimination patterns or because people's perception is different from government's keen measures;

Currently the World Bank Group defines poverty as someone who lives with less than 1.90 dollars a day<sup>7</sup>. However, that is the definition of absolute poverty and cannot be applied to every country: in a developed country there are almost no one who lives with less than 1,90 dollars a day and yet there are still poor people in such countries. As so, we must consider the concept of relative poverty.

However, the concept of relative poverty states that someone is poor from the moment when he/she cannot meet needs that are met by most of the population, what is a vague concept (Alkire and Foster (2011)).

A one-dimensional count of poverty is not desirable since there are many dimensions of poverty that are linearly independent of each other, that is, it isn't because an individual has a house of his own that we are able to conclude that such house allows him to live without any deprivations (Alkire and Foster (2011)).

Bourguignon and Chakravarty (2003) state that "a multidimensional approach to poverty defines poverty as a shortfall from a threshold on each dimension of an individual's well-being". Taking such statement into account, several methods of measuring poverty have arisen.

According to Alkire and Foster (2011), globally speaking there are two major challenges facing the existence of multidimensional poverty: on the one hand, the generality of models assume that the variables that determine poverty are numerical variables when most of the time we find ourselves in the presence of categorical variables. On the other hand, the variables used are often inappropriate when we think about multidimensional approaches to poverty.

The union method of unification consists on considering someone as being poor if that

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<sup>7</sup> <http://datatopics.worldbank.org/world-development-indicators/themes/poverty-and-inequality.html#international-poverty-lines>



person suffers from deprivations in at least one dimension of poverty. The problem in this case will be false positives, that is, there may be individuals suffering from privations in more than one of the dimensions of poverty not because they are necessarily poor, but because they have made bad choices in allocating their income (Alkire and Foster (2011)).

On the other hand, an intersection approach considers as poor someone who suffers from privations in all dimensions. In this case the problem will be false negatives, that is, there may be several individuals who are not poor from the perspective of all poverty dimensions but are, in fact, in a situation of extreme poverty. According to this approach someone that looks apparently healthy, either being actually healthy or not, even considering that a part of how healthy we are depends on our genetic, even being extremely poor won't be considered as so according to this approach (Alkire and Foster (2011)).

For this reason, some authors resort to a cutoff level method, in which we consider as poor an individual who suffers from privations in  $K$  or more dimensions of poverty, being  $K$  part of the interval  $[1, (\text{total of dimensions of poverty analyzed})]$ .

When classifying individuals, the authors study whether a given individual is in a situation of deprivation in respect to each individual poverty dimension and, in a second phase, they seek to measure how lasting and deep deprivation is, setting a threshold from which the individual can be considered poor in relation to each poverty dimension individually. The last phase of the process consists on analyzing the level of privations to which a given individual is subject, giving a weight to each one of them according to the influence on the individuals' well-being. They have called this process "dual cutoff method" (Alkire and Foster (2011)).

Some of the advantages of the process in question include the fact that the result is not influenced by improvements in well-being in categories in which the individual(s) did not suffer from any types of deprivation, contrary to what was happening in the one-dimensional approach. The fact that it allows us to analyze and to group lots of individuals on an individual basis and the fact that it allows us to group individuals according to their privations and thus ordering them according with their need of intervention (Alkire and Foster (2011)).

### **2.3. U.B.I "SWOT" analysis**

Universal Basic Income's topic was initially approached by Thomas Moore in 1516 in his book "Utopia", having been transversal to the History of Economic Thought. However, only in 1962 the idea of an u.b.i. such as it is currently mentioned was made explicit in the form

of a negative tax rate. Friedman (1962) suggested the introduction of a progressive tax rate as the one that is currently applied in most countries, but with the particularity that, for households with incomes below the minimum threshold set for income, the tax rate would be negative, that is, instead of the state charging a tax fee it would fill the remnant to ensure that all families had an income that allowed them to live with dignity. From that moment until today, several other economists, some of whom also Nobel prize's winners, have been defending the implementation of this measure since, despite all efforts to eradicate poverty by promoting equity, such objectives remain unreachable.

According to Browne and Immervoll (2017), less than 50% of those who are actively seeking employment are entitled to benefit from unemployment benefits and social inclusion income benefits. Besides being subjected to tight scrutiny, they are still looked at by the generality of society, that is, there is a lack of scope for all those in need that social security measures are unable to respond today. So this is an advantage in favor of universal basic income: it manages to respond to all, ensuring poverty is fully abolished, at least in theory. Another advantage presented by u.b.i. is that, since it has no restrictions, there is no need for governments to have to invest money to find out if a given individual should effectively benefit from a given transfer or if not, avoiding also the costs of monitoring him to know the evolution of his incomes. Even thought, at first glance it may seem inefficient for the state to give people money in a first moment to collect them under the form of taxes in a posterior moment, it is not. As we know taxes are settled on a progressive basis, so it is ensured that the value paid in taxes by the wealthiest classes exceeds u.b.i. transfer, while for the middle classes the amount paid is roughly equal to the value received and for the lower classes the value received is higher than the amount of taxes paid.

Another advantage is that it ensures economic independence, avoiding, among others, marriages that are prolonged by convenience for an indefinite time, since now the man is not the only one who earns money for sure, or that workers are exploited by abuser bosses, since now they have lower financial pressure to accept highly dangerous or contemptuous tasks ((Forget (2011) and Groeneveld, Tuma, and Hannan (1980)).

According to Sabate (2018) this measure would be partially self-sustainable since, by replacing other existing measures, such as social inclusion income or unemployment benefit, it would not incur extra costs, since even if u.b.i. did not exist that money would have to be spent anyway.

According to Haushofer and Shapiro (2016), the advantages of such a measure are that money is fungible, that is, money can be exchanged for goods or even for money. Families are heterogeneous, so it is possible that the increase in welfare is higher for families when they receive this kind of transfer against the one observable when there is an attempt to increase people's qualifications because we all have different abilities and, for some, schooling may not be the best option because expected wages may not pay off the number of years invested in education.

In the disadvantages side, if the objective is not clearly defined, the existence of an u.b.i. can generate tax rates on the level of income enormously high, which is not desirable since it acts as a disincentive for people to participate in the labor market or can result in an individual transfer that does not even serve to cope with subsistence needs, which leaves those who effectively have very low incomes in a poverty situation. This is a disadvantage of u.b.i.: Whether its practical application is feasible. Also, according to Haushofer and Shapiro (2016), another disadvantage that may result from the application of an u.b.i. is related to the issue of incentives: for example if the u.b.i. results in an small positive net transfer (after deducing the required increase in taxes), then the decrease in the number of people willing to work in some positions can be explained due to the existence of a higher bargaining power that allows them not to be forced to accept poor work conditions. However, if that resultant net transfer is slightly higher than the optimum value it may cause reservation wages to increase above the firms' maximum willingness to pay for a given position which will result in scarcity of labor for some specific tasks (Browne and Immervoll (2017)).

Much of the criticisms that have been made to u.b.i. relate to the high amounts of money needed to sustain such a measure: even Bill Gates himself has come to say that "neither the United States are rich enough to allow people not to have to work" while other personalities claim that the amount spent on this measure should be applied at the education or health levels, since improvements in social welfare are greater with investment been made in these areas when compared with u.b.i. investment's returns.

To the extent of this problem, Andrade (2015) comes with an innovative solution: taxing data used by large computer multinationals. The author's view is that it is possible to increase revenues based on an increase in the burden of taxes on large multinationals that, through data manipulation, can control our economy. According to him, a fee on the use of our data paid by those who profit from them would allow us to generate the necessary revenue to

support an u.b.i. in addition to representing a fair compensation to us all for seeing our personal information disclosed.

The existence of a digital economy implies that part of our data is absorbed by the large multinationals not with our consent, but simply because we use information and communication technologies. This idea gets an higher importance if we consider that "data is the maximum externality: whatever we do we generate them.", as it is stated by Paul Sondereger, Oracle's strategist.

Moreover, a particularity of this digital economy is the "network effect" that causes an increase in the number of followers of a social network, for example, to make this social network more attractive, which leads to the number of followers increasing more and more, which combined with the existent oligopolies result in really high levels of profit (Andrade (2015)).

Initially, large companies used data obtained to make their service more attractive at the eyes of their potential consumers. However, as time passes, they realized that data, unlike the great growth booster of the last century oil, has the advantage of possessing the property of non-rivalry, that is, even though a company is using data that does not prevent another company from being able to use that same data too.

The basic idea behind a patent is its owner to be able to benefit from a unique or original idea, which has value or capacity of generate value, in which we spend a given amount of time and effort.

Although most people do not realize, data is very valuable, so we should be rewarded for those data fairly and not through the current method in which we exchange data through access to a social network for example.

Thus, if such measure is applied, it is ensured that u.b.i. is not intended for people who did nothing for society, since they gave up their data; that governments have the capacity to accommodate this measure, since the large multinationals that manage our data will pay and even that there is greater fairness between our exchanges with the major technological multinationals (Andrade(2015)).

Another disadvantage of u.b.i. is that it annihilates the action of automatic stabilizers. As everyone receives the income regardless of whether they are employed or not the stimulus

action that the unemployment benefit usually has in the negative phase of the economic cycle ceases to exist (Browne and Immervoll (2017)).

Schneider (2017) argues that most people tend to forget the adjustments that will result from the introduction of an u.b.i.. According to him, the results will be an increase in tax evasion, since the increase in the tax burden will increase the incentive to evade taxes, mass migrations, since there will be many people trying to get into countries that have an u.b.i. just to benefit from it, avoiding the need to work. This can make the measure even more unsustainable and that, having everyone access to an extra income, of course the demand will increase, which will increase prices and therefore increase inflation, and can annihilate real effects on actual yields.

According to the author, most people faced with such a high tax burden will not benefit from the introduction of an u.b.i., on the contrary it is possible for some people the available income will decrease substantially. Thus, according to him, the effect will never be universal, idea also sustained by Sabate (2018).

According to Sabate (2018), one of the major u.b.i.'s failures will be that its calculation is not as easy as it appears, since the expenses of an adult, an elderly person or a child have little correlation, but above all that, while an adult has full capacity to manage his extra earnings, for a child or even an elderly person the same will no longer be true, and these u.b.i.' issues must be taken into account.

According to Ravallion (2019), apart from the issue of advantages and disadvantages, particularly with regard to the underdeveloped world, but not only, there may be many obstacles in particular with regard to the transmission of information, since sometimes the poorer population does not have access to information technologies. Another obstacle not to be forgotten is that, generally, in poorer areas, whether developed or not, there is a trend for the emergence of usurers, that is, people who make loans to desperate individuals with high interest rates and that, in the face of implementation of such measure, would see much of its power disappearing, which may lead to heavy resistance to the implementation of the measure.

### **3. Empirical Case Studies**

Moving from the theoretical part to the empirical one, it has been observable that u.b.i.'s experiences are becoming more and more common either because it is politically attractive to give money to everyone, so politicians are interested in discovering whether u.b.i. is feasible or not, or because of the band waggon effect that states that, as politicians like to being seen doing things, the moment when a political measure becomes fashionable they all want to try to implement it. The fact that u.b.i. is a compromise and not a commitment is also important because it reduces the risk of such a measure being implemented because it will not affect political cycles. It is worth mentioning however that on the one hand u.b.i. measures tend to benefit politicians, but on the other hand political commitment is important because these experiences cost money, require expertise in management to achieve their purposes and need some legislation in favour to be made feasible.

Below, in this section, there will be presented some experiences conducted in countries such as Canada, United States of America, Ecuador India or Kenya, conceptualizing the parameters followed in the selection of the net recipients as well as the conclusions regarding a series of social issues.

#### **3.1. Canada's case**

##### **3.1.1. Manitoba's experience**

###### **Experience's conceptualization:**

As it is brought to us by Simpson, Mason, and Godwin (2017), the experience of Manitoba, a province located in Canada, was carried out during 1975 and 1978 and consisted on observing how people's behaviors were affected by the introduction of a negative tax rate, one of the forms of application of a universal basic income, initially suggested by Economics' Nobel Prize winner Milton Friedman.

In the genesis of this experience, there is an increase in the importance given to issues related to poverty and crisis associated with the fact that oil, the big engine of the economy, was found not to be a renewable resource, which in association with political tensions observed in the OPEC (Organization of Petroleum Exporting Countries) countries led the prices of this raw material to increase hugely, which plunged, among other countries extremely dependent on oil, the US and Canada in a crisis situation. The objectives of the experiment

were two essentially: to analyze the consequences resulting from the implementation of an alternative social welfare promotion system, examining the effects occurring on the labor supply side and, on the other side, to analyze the main challenges associated with such a measure, by inferring about its feasibility.

Following a plan previously defined by other authors, the selected groups were mostly composed of people with few incomes from both Winnipeg, Manitoba's capital, and other rural areas. Part of these families who were entitled to receive this type of transfer saw this measure being applied to them (treatment group) while to the remaining nothing was given so that they could function as a control group. The exception to this treatment was the case of Dauphin, a more concentrated population, in which all members who had a lower income level than the minimum threshold set could benefit from the measure, as a way of testing the effects of an effective universal income in a given population. It should also be noted that the level of income per capita previously observed determined the (negative) tax rate to which families were subjected.

As the measure in question was used in the logic of a form of partial universal basic income rather than a total u.b.i., articulation with other measures became essential, so income obtained via other transfers such as unemployment benefit or pensions were deducted from the initial value provided by the measure, which is why families were followed three times a year during the experiment. It is also necessary to highlight that, even if the income was subject to a negative tax rate, the heritage, that is, the aggregate set of assets and goods, was only exempt from the rate up to a value of \$3000, and the tax rate was progressive from that moment on. The experiment was abandoned after three years.

### **Empirical Findings:**

Regarding this experience conducted in the 70s (recovered later by Simpson et al. (2017)), Hum and Simpson (1993) concluded that the overall effect of Mincome (name that was given to the project in question) on the labor supply was insignificant both for the husband, the wife or for an unmarried woman when controlled the period of occurrence of the observations. They found that women who had just recently become mothers were the group for which the number of hours worked decreased the most, that is, the variable that had the most impact was the existence or not of small children in the analyzed household. Both Hum and Simpson (1993) as later Forget (2011) concluded that the main impact on the labor

market occurred because people from the tertiary sector have decided to invest in human capital and, what caused a postponement in their entrance in the labor market. This way it was allowed for people with fewer resources to reduce the pressure related to the need of earning money as soon as possible, that is, it was possible to ensure they had the same level of opportunity in relation to the others, so not only has poverty decreased but it has also generated equity.

Groeneveld et al. (1980), in respect to previously mentioned Manitoba experience, concluded that the existence of an extra income caused the number of divorces to increase substantially more in the group in which interventions occurred in relation to the control group. According to them, the result obtained may not always be the marital dissolution's response in relation to the introduction of an u.b.i.. Roughly speaking, there are two effects that must be considered: on the one hand, the independence effect, which leads to the fact that, now, within a given marriage, either party is not dependent on the other hence the receivable income is independent of the marital status, which generates an incentive for marriage dissolution. On the other hand, it is necessary to consider the income effect, since sometimes one of the reasons presented for the dissolution of a marriage is that the couple's head is not able to earn enough to give his family a decent life and, enforced by shame and social stigma, abandons the relationship.

The relationship between poverty and lack of health is generally known, either arising from the absence of conditions existing in houses or arising from the existence of moderating fees. Marmot, Allen, and Goldblatt (2010) go even further in their analysis stating that, for two populations in all equal except in one parameter: equity, it is verified that the one with the higher level of equity will have the higher level of health as well. According to Forget (2011), the existence of an u.b.i. will increase the incomes of poorer households, which improves the health level of a population. If the moderating rates are progressive it will lead to a higher level of equity between higher and lower incomes. Through another channel, the risk channel, the existence of an extra income will lead to a lower subjection of people to more dangerous activities, so the number of work accidents or the health consequences arising from someone working in degrading work conditions will be lower. Based on this theory, it is not surprising that when the author estimates her regression, the conclusion is that the introduction of Mincome led to the number of hospitalization ratios to drop by 8,5% and



the number of people admitted due to problems related to mental health to fall also significantly.

Simpson et al. (2017), observing the growing interest in conducting pilot experiences of assigning a universal basic income, analyze the effects of the first experience of this type to be carried out, the experience of Manitoba.

First, based on the results obtained, the authors tried to eliminate the resulting effect of the fact that, because of the famous oil crises as well as the crisis of Yom Kippur in 1973, which resulted in an oil embargo on the part of the Arab countries towards the other countries, inflation levels were continually increasing.

According to the authors, linked to the failure of this project may have been several factors resulting from the idea being put into practice for the first time, namely a serious budgetary drift, since initially the project was supposed to cost 17 million dollars. However, partly due to the hyperinflationary context the value that was invested in the experience either with the values that were given through u.b.i. form, either through the costs of hiring about 200 people generated estimated expenditures of 85 million dollars, that is, about 50000 dollars per participant, which raises some doubts about the feasibility of the project. On the other hand, it was also observed that a deviation occurred in relation to the initial motivations of the study, which may have partially contributed to the observed budgetary drift. Another identified issue is related to the fact that technical difficulties have arisen with the analysis and documentation of data concerned, which led to the availability of the results obtained with the experience only being available for about six years after the end of it. Finally, and because of the project having lost interest, the largest financier excluding Canada's state has given up, what made the project even more unsustainable.

A possible project to implement a measure in a similar homework was also abandoned in the decade of 1980, since the US and Canada entered the so-called "golden age" characterized by plenty of abundance, great GDP growth, very low levels of unemployment and, as so poverty was no longer a theme in vogue. It may also have contributed the fact that the results concluded that, in a recent future, it would not be possible to implement such a measure in a generalized way. A clear proof of the failure of this project is that little literature has been drafted based on its results.

It should be noted, however, that the storage of information in to Excel databases, easier to consult and the availability of the results of the experience without restrictions online led to a project rebirth.

## **3.2. United States of America's case**

### **3.2.1. Alaska's experience**

#### **Experience's conceptualization:**

As it is pointed out by Berman (2018), in Alaska, in 1976, during a time of greater abundance a considerable portion of the revenues obtained from oil sales was saved in a fund, and the gains obtained with interest distributed among the population who lived in Alaska for at least 6 months at the time the transfer takes place.

The amount that ought to be distributed by Alaska's population was called "Permanent fund dividend" (PFD). It is important to emphasize that as one of the necessary requirements for an u.b.i. to be viable is to have a legal background, the existence of this fund, and the right to access it is defined in the Constitution. Regarding the latest data we can see that in 2017 the value of the fund totalized about 60 billion USD, that is, about 80000 USD per capita, having been distributed about 1100 USD per capita in 2017, that is, about 692844900 USD in 2017<sup>8</sup>.

Being a fund, there are still some associated risks such as the interest rate risk and the inflation rate risk, which causes returns to suffer from a great volatility. To mitigate the inflation rate risk, about half of the annual gains obtained with the fund are reinvested, being only the remainder distributed over the form of dividends. About the interest rate risk, it is not possible to mitigate it which helps to explain why the amount distributed per capita varies without a necessary connection to the growth economic cycle.

However, currently, in Alaska, per capita GDP remains only about half of the American per capita GDP, with an employability rate of just over 50%. Schools continue to appear in the lowest percentile in terms of results and a large part of Native population (which represents about 1/6 of the total) continues to reside in extremely rural areas, sometimes without links to urban centers.

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<sup>8</sup> Permanent Fund Dividend Division, Annual Report 2017- State of Alaska, Department of Revenue

### **Empirical Findings:**

Berman (2018) analyses the effects of introducing an u.b.i. in the Alaskan region, a predominantly rural region, to see how the measure came to mitigate the effects of poverty.

The conclusions show that, without the existence of this u.b.i., the percentage of poor in Alaska would pass from the current 9.1% to 11.4%. Although at first glance the reduction does not seem very significant, when we truncated the sample to one that contains only those more sensitive to poverty, that is, Alaska's natives (who were underrepresented in the total sample given that they only represent 1/6 of the total population), we found that the difference observed would make the current percentage of poor of 17.2% to increase to 22.5%, that is, a difference of 5.3 percentage points.

It is also important to analyze that income has a very important effect both when it comes down to native children (of whom 24.8% are poor and otherwise would be poor 32.9%) as when it comes down to the native elderly (of whom 7.6% are poor and otherwise would be 13.3%).

The downside of this study, however, arises when we compare poverty reduction in marginal terms and come to the conclusion that, over the years, the income offered each time withdraws a lower percentage of people from poverty, having reached its maximum in 2000, when the level of poor Alaskan natives decreased from 22.4% to 12.6%, that is a reduction of 11.8 percentage points or almost 44%. Between 2011 and 2015, the percentage of natives who were no longer poor due to this income was less than 25% (without income 22.5% of the natives would be poor while when u.b.i. was applied the poor natives represented only 17.2% of the total, a reduction of 5.3 percentage points).

When we seek to divide the households according to their composition, we conclude that this measure had more impact in the case of couples with a child or more than one child, observing for both cases reductions of about 7.0 percentage points due to the introduction of the permanent income. Once again, the conclusions also point towards a lower measure's effectiveness, since the variations in the percentage of poor natives in rural areas in 2000 (the year in which the effectiveness was higher) had been 20.5 percentage points for households with a child and 13.5 percentage points for households with more than one child, which corresponds to an ability to withdraw more than 50% of these poverty households.

Regarding the criticism around the universal basic income as a measure of fighting poverty, it was found that there was only a reduction in the number of working hours in the case of married women and young adults, and even so a reduction though not very significant, being even compensated by the productivity obtained through work at home for the women's case.

In the case of young adults, it was observed that the levels of schooling increased, which is why they entered later in the labor market, however, their productivity has increased too, which has compensated the mentioned above effect.

Finally, it was also possible to conclude that the productive investment made because of the additional income more than offset the expenses with u.b.i.

It is interesting to note that the empirical evidence pointed to the absence of a substitution effect, that is, there is only the existence of an income effect, and what happens is that people now manage to maintain higher levels of consumption with the same number of hours of work.

Last but not the least, regarding the possibility of this extra income being used in deviant activities, the results showed that there were no significant differences in the consumption patterns observed for Alaska and those observed in the remaining 49 states.

Variations in performance effectiveness can be explained by two paths: On the one hand, the percentage that the Permanent Fund Income represents in inhabitant's total income declined and, on the other hand, the economic crisis caused many native incomes to fall to values even lower than the defined poverty threshold. Another argument is that, according to the rules of the United States, a couple who is not married counts as two households rather than just one.

The conclusion is that Permanent Fund Income has made it possible to significantly reduce poverty levels, particularly regarding cases of children and the older population. However, since it has only mitigated poverty rather than eradicating it, we conclude that this is an efficient measure not of a total universal basic income, but of a partial universal basic income, which must continue to be complemented with other alternative measures.

### **3.3. Ecuador's case**

#### **Experience's conceptualization:**

According to Hidrobo, Peterman, and Heise (2016), in Ecuador, it has been observable that the indexes of violence against women tend to be very high both in the case of Ecuador natives as in the case of Colombian refugees. As this theme is becoming more and more important, the World Food Programme (WFP) has implemented a “Cash, food and voucher” program in Northern Ecuador in areas with a high number of Colombian refugees that started in April 2011 and ended at September 2011. Seven urban centres were considered being the eligible beneficiaries selected based on criteria such as the existence of institutions available to provide such resources to its beneficiaries, a high number of Colombian refugees (at least 10%) and poor populations (poverty index above 50%). To those who were selected as eligible it was distributed around 40 dollars a month per household.

#### **Empirical findings:**

According to Hidrobo et al. (2016), the existence of an u.b.i. measure applied in Ecuador in 2011 lead to a decrease between 6 and 7 percentage points in the probability of a woman being controlled by her husband or subjected to violence by him. Another interesting conclusion is that the results achieved through this measure were not statistically different from those obtained through in-kind transfers. This measure increased women's argumentation power as well as the distribution of tasks at home level, which made the relations more egalitarian and reduced the stress levels associated with poverty risk, which might be the explanation for the observed decrease in violence.

### **3.4. India's case**

#### **Experience's conceptualization:**

As Standing (2012) points out, in India, an important part of the population is in favor of delivering subsidies to food producers while another party is in favor of the existence of monetary transfers. However, both solutions have faced a large chorus of criticism, from risks of an even greater level of corruption or unsustainability to the possibility of producing lower quality foods or widespread cuts in public services, being the only evidence observed that about 30% of India's population was still in extreme poverty. For this reason, UNICEF has created a program that, in 8 villages of Madhya, guaranteed to all adults an income of 200 rupees per month, plus an extra 100 rupees per month per child, later increased to 300 rupees in the case of adults and 150 rupees in the case of children, following also the results observed for 12 other villages where such measure has not been implemented. To test if it

was important that the beneficiaries have institutional representation for the measure to work in its fullness, it was ensured that in half of the villages this representation existed while in the others it didn't.

To avoid bias, half of the villages in which the transfer occurred and half of the villages in which these transfers did not occur were randomly selected.

### **Empirical Findings:**

Standing (2012) analyzes the impact of basic unilateral monetary transfers made by UNICEF in some villages in Madhya, in India. The findings observed were that the existence of an u.b.i. made it possible for a large part of the households to use that money to fight against malaria and to reinforce the hygiene and safety conditions in their homes, to improve their food conditions, with a widespread increase in children's weight. Thus, contrary to what is foreseen by critics, the existence of an additional income did not result in deviant behavior. It was also observed that the attendance and the results obtained by children in schools improved significantly, either due to better nutrition or due to better teaching conditions.

There was an approximation between the incomes of women, disabled persons or single parents, the most probable candidates to face poverty in comparison with the remaining population's income. In fact, there was a large reduction in the number of loans required, and the only people to feel harmed were the lenders who worked in the region and demanded very high interest (5%/month), and thus it was also possible to reduce the levels of corruption.

There was also a great growth in the level of investment at a small scale, a growth in productivity and, against the prospects of critics, an increase in the number of working hours, although there has also been a significant increase in the number of self-employed people. It is important to emphasize that this measure has benefited women more than men, which makes it possible to counterbalance the wage gap between genders.

In short, u.b.i. and its results in India are a good example of the celebrated principle of gestaltism that tells us that "the whole is greater than the sum of the parts" since, with just one measure it was possible to replicate a lot of other measures' effects.

### **3.5. Kenya's case**

#### **Experience's conceptualization:**

As Haushofer and Shapiro (2016) point out, in Kenya, between 2011 and 2013, through the program GD (give directly) were assigned in a first phase transfers of 404 dollars to randomly selected households from among those identified previously as being very poor. In a second phase it was attributed to 167 of the selected households another 1121 dollars, distributed by seven monthly installments.<sup>9</sup> This is a good starting point to study the potential effects of an u.b.i. since the measure was in practice for a short time, but the amounts transferred were high, and the objectives were to observe whether there were changes in consumption patterns, as well as whether there were changes in the health, education, access to food, and gender equality levels.

### **Empirical Findings:**

Haushofer and Shapiro (2016) analyze the effects from the introduction of an u.b.i. in Kenya. Nine months after the program started it was observed that the average monthly consumption increased 36 dollars, which, compared to the average observed before GD, corresponds to an increase of about 23%. As regards the consumption of tobacco and alcohol, no significant effects were observed, and the large part of the income was spent on investments that were profitable, and that led the level of revenues extracted from agriculture, livestock and industry to increase from 49 monthly dollars to 65 per month, an increase of almost 33%, with the households diversifying their sources of income, which allows us to conclude that GD did not cause dependence. The negative part regarding the u.b.i.'s impact was that the level of expenditure increased also, which minimized the effects of the increase observed at the revenues' level. Furthermore, there were no significant differences in the levels of education and health. Although, regarding this last point, it was observed that the prevalence of mental illnesses decreased and that the levels of happiness increased in a statistically significant percentage.

Besides the mentioned costs of providing people with u.b.i., some other costs must be considered: the costs of selecting the families that will receive such amounts and the costs of conducting the referred study, let's call them operational costs. In large transfers (1525USD), operational costs accounted only for an extra 168 USD while on the case of small transfers (404USD), operational costs accounted for an extra 92 USD, so the project's feasibility was never at risk.

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<sup>9</sup> Calculated values assuming the PPP set by the World Bank of 0.016 USD/KES

### 3.6. A different experience: Finland's case

#### Experience's conceptualization:

Regarding the u.b.i.'s topic in the latest years, the experience that has capture the higher level of media attention is the one that has occurred in Finland between the years of 2017 and 2018.

Finland has chosen to implement an u.b.i. because, as it is common to most of the developed countries, their social security system was facing high levels of pressure. As so the finnish government was trying to test whether a model based on an u.b.i. could avoid so much bureaucracy costs and such a waste of time achieving the same goals, that is, to try to fight against poverty.

According to the report *The basic income experiment 2017-2018 in Finland, Preliminary results*, published in 2019 in Helsinki by the ministry of social affairs and health, the basic income amount was settled at 560 euros per month per individual, that is, the finnish government has chosen a partial u.b.i., requiring this measure to be complemented with other accessory measures. The value was not randomly chosen however: it corresponded to the unemployment benefit provided by finnish social security system.

Based on this idea, 2000 individuals between 25 and 58 years old who beneficiated from such income in the year before were selected<sup>10</sup>. On the one hand, this way it is ensured that there are no problems regarding the beneficiaries' capability to manage such income (the elderly and the youngest cannot do as so). Nonetheless, on the other hand it generates a problem: in order for anyone to benefit from such transfer it ought to have worked in the past and not to be working in the present, that is, this experience would have two bias: on the one hand it would only be provided the transfer to unemployed people, and worse, it would require that someone has already worked in the past, that is, it would not ever be universal, since it would be imposed a serious restriction. Finally, there is another even more complex problem: the unemployment benefit in Finland, as in most countries, is means tested<sup>11</sup>, that is, the amount you receive will be a function of how much you earn. The result will be that all the pre-selected individuals will be approximately on the same range of income so there

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<sup>10</sup> The basic income experiment 2017–2018 in Finland Preliminary Results

<sup>11</sup> For more details consult: <https://www.kela.fi/web/en/labour-market-subsidy-is-means-tested>



will be a truncation for the results obtained in the case of the poorer population, for example. The problem that arises from here is that, regarding the observable characteristics we may still be able to compare the control group with the treatment group. However, when we think about the non-observable characteristics, that is, their ability, the same cannot be said. The fact is that nowadays jobs begin requiring higher and higher levels of education and it is worth mentioning pay higher wages the higher are the qualifications, *ceteris paribus*, on average, because schooling level is seen as a signal of potential. However, there is a problem: some people cannot learn as fast as the others, that is, for them a higher level of schooling will not pay off either because they will take years before achieving it or either because they are not able to achieve it at all. As firms are looking for more qualified people these less qualified individuals will not be able to access to a wide range of jobs and will be more likely to become unemployed (Leigh & Ryan, 2008). Thus, it is natural that the ability level between the control group and the treatment group are statistically significantly different.

Despite all the criticisms that were made towards the conceptualization of this experience, the achieved results still have a huge importance hence that the experience was extended to all the individuals that have met all the requirements and not only to a few of them as most experiences made so far. This way it is possible to compare the same groups of individuals in two different moments in time. As the experiment has been made compulsory to all the selected individuals, the control group ought to be chosen using other criteria: in this case there were randomly selected 5000 individuals from the total of 173222 who have received an unemployment benefit from Kela, the finnish social security system, in November of 2016, independently of their age or transfer amount received (excluding of course the treatment group).

It is always worth mentioning that the control group and the treatment group were approximately similar regarding their observable characteristics. The main differences are related to the fact there were on average higher number of children per household and the households were larger for the treatment group. This can be related to the fact that, even considering that there are not significant differences between the two groups concerning the individuals age distribution, the treatment group has excluded individuals over 58 years old while the control group has not. The experience has come to an end because the finnish government was not willing to spend more money trying to increase the number of people that would receive u.b.i.'s transfers.

### **Empirical Findings:**

Regarding unemployment duration it is possible to conclude that the existence of an u.b.i. has not caused unemployment duration to increase, at least not in a statistically significant amount.

As to the extent concerning the agents trusts regarding other people it was observable that, on average, *ceteris paribus*, u.b.i.'s net recipients trusted more in other people and in politicians when compared to the control group. In the same line of thought, the results revealed that, *ceteris paribus*, on average, the levels of self-confidence, the expectations towards the future and the health perception have increased more for the treatment group when compared to the control group. Moreover, the treatment group has also report to have experienced, on average, less stress and a higher ability to concentrate.

However, the most important conclusions were the fact that the u.b.i.'s net recipients have reported to have a higher incentive to accept a full-time job in the case they were working part-time or to accept a job offer in the case they were unemployed and the fact that the perception of the agents towards the level of bureaucracy involved is also positive, which proves that the experience managed to achieve the two goals defined by the finnish government.

#### **4. Revisiting the Manitoba's experience: An econometric approach**

The purpose of this section is to estimate regressions using the data of the first u.b.i. experience ever realized, in Manitoba, between 1973 and 1974. These thesis' regressions will be based on such experience because it is the one that provides extensive data without any restrictions and because the experience as a result of being the first u.b.i.'s trial was considered as a failure (Hum and Simpson (1993)).

The main goal with such econometric analysis is to test to what extent the variables response to the introduction of an u.b.i. in such experience have led to the results that theoretical models predict. In order to evaluate this experience ("Mincome" as it was called) individuals answered a survey with a lot of questions regarding income, family composition, job situation or individual points of view regarding some key society aspects, such as how they evaluate their situation when compared with the rest of the population or their position regarding whether all jobs are worthy or not. All the participants, regardless of being in the control group or in the treatment group, participated in the survey. Following that survey data were set with a considerable time delay in an Excel file and, now that the u.b.i. topic has become more popular, they were placed online in the Manitoba's University so that everyone can have access to it. The original survey had over 100 key questions, however along this thesis there will be an attempt to keep the models as simple as possible in order to make its analysis simpler.

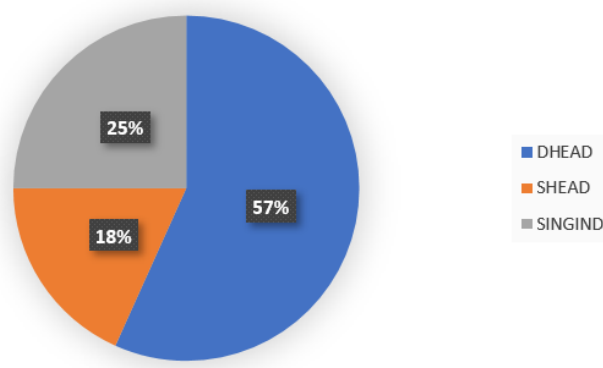
The key questions that this thesis will try to answer will be what is the effect of an u.b.i. in the number of weeks worked, differentiating such effects both for male heads as for female heads, and in poverty levels, this thesis' main topic. As there are no direct indicators that allow to see Mincome's effects regarding poverty levels, there will be used two proxy variables to access such effects. In this line of thought, it will be analyzed what was the effect of such transfer on the probability that the male head decided to enroll in school, comparing with the probability of the same situation to occur with the female head, as well as the effects regarding job satisfaction for both the female and the male heads. Regarding schooling attendance, the reason why this variable is important is because it is easily understandable: the decision for someone to attend a further level of schooling has an opportunity cost of not earning any money during that period that some families are not able to support. As to what concerns job satisfaction, as it was previously mentioned, a poverty situation causes people to accept poor work conditions, that often involve job exploitation situations, which

decreases job satisfaction levels and it was also shown that poverty causes a pressure on people that often increases the probability of people developing mental illnesses (Forget (2011)). Regarding the effects on the number of weeks worked it is intended to check if there is a statistically significant decrease in the number of hours worked as a result of people benefiting from a u.b.i. and if such effect is the same for both male heads as for female heads because it is commonly said that u.b.i. provides higher independence levels. Regarding schooling levels, the goal is to see if the existence of such u.b.i. causes the number of people enrolled in school to increase and this thesis' goal is also to find out if that effect occurs for both genders or only for one of them. Regarding job exploration, this thesis will use the variable satisfaction as a proxy of work conditions: the goal here is to see whether the introduction of an u.b.i. was responsible for people to become more pleased with their jobs, that is, if the extra money margin has allowed them to choose the jobs that suit the best for them.

#### 4.1. Data description

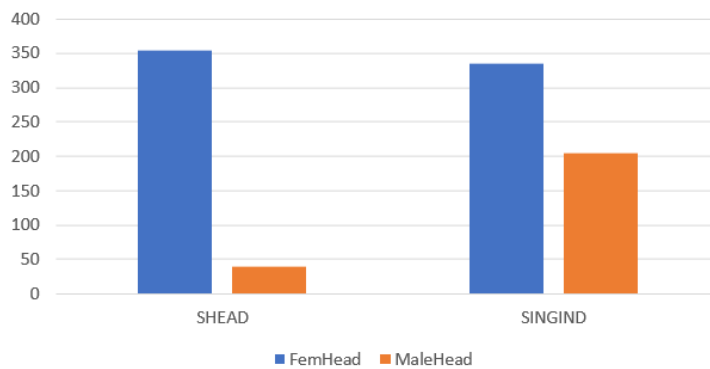
To compute these regressions, there was the need to rename some variables and to create some others based on the interaction between the variables that were listed in the Manitoba's University database. Considering what the goals are, in this section we present a set of detailed descriptive statistics on the variables of interest.

**Types of households:** From the total of households enrolled in this experience only 1223 of them had both a female head and a male head (DHEAD). As to the others, 539 households were only constituted by a single individual (SINGIND) while the remnant 394 were formed by a single head but with more members (SHEAD) (see figure 1).



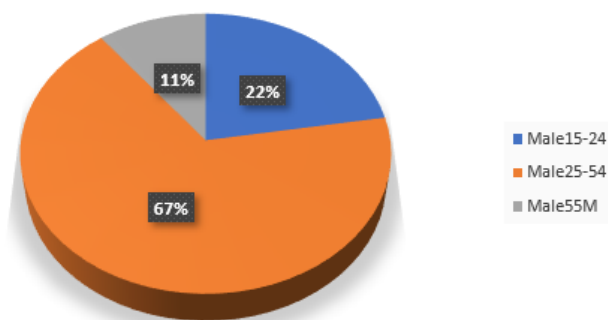
*Figure 1 – Types of households*

It becomes important to mention that the number of households with just a female head is much higher than the number of households with just a male head. In fact, Figure 2 allows us to see the differences existent: there are only 40 households with only a male head but there are 354 households with just a female head. Also, there are 334 single headed households with a female head and only 205 households with a male head (see Figure 2).



*Figure 2 – Single heads and single individuals by gender*

**AGEM:** From the total of households enrolled in the experience there were 1468 male heads. Most of them (987) were between 25 and 54 years old, 328 were between 15 and 24 years old. The remaining 153 were over 55 years old. It is also worth mentioning the eldest male head was 74 years old while the youngest was 18 years old (see figure 3).



*Figure 3 – Distribution of male heads by main age groups*

**AGEF:** From the total of households enrolled in the experience there were 1911 female heads. Most of them (1230) were between 25 and 54 years old, 543 were between 15 and 24 years old. The remaining 138 were over 55 years old. It is also worth mentioning the eldest female head was 65 years old while the youngest was 15 years old (see figure 4).

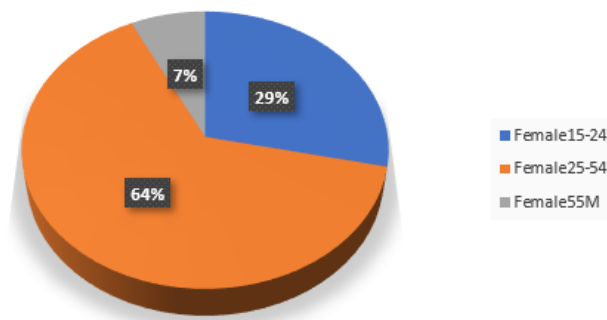


Figure 4 – Distribution of female heads by main age groups

**FAMSIZE:** There were enrolled in this experience households formed by single individuals up to households formed by 12 people, being the average household formed by 3 people. The standard deviation is 2 people which indicates us that the sample is widely disperse (see figure 5).

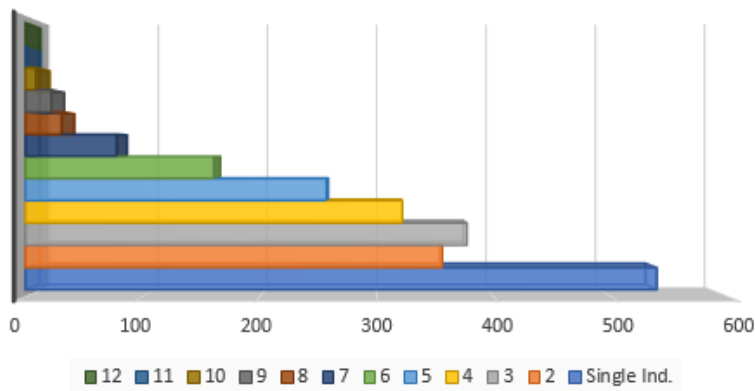


Figure 5 – Distribution of households by total number of members

**Age0to5:** There were enrolled in this experience households constituted by no young children up to households with 5 young children having the average household no young children. In this case the sample is clearly biased towards the right side, that is, there are only few families with over 1 young child (see figure 6).

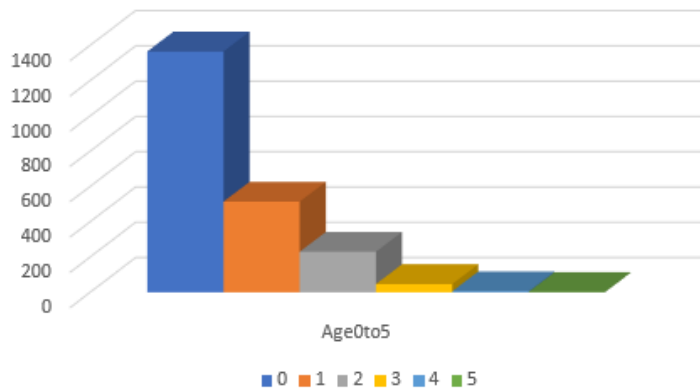


Figure 6 – Distribution of households by number of children aged between 0 and 5 years old

**Age6to15:** There were enrolled in this experience households constituted by no children up to households with 8 children having the average household one children. The sample is clearly biased towards the right side, that is, there are only few families with over 1 child (see figure 7).

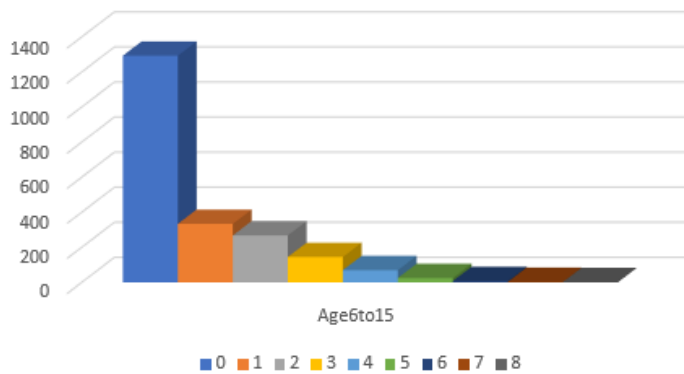


Figure 7 – Distribution of households by number of children aged between 6 and 15 years old

**Age16M:** There were enrolled in this experience households constituted by no adult besides the head adults to households with 5 adults besides the head adults having the average household no adult besides the head adult. In this case the sample is clearly biased towards the right side, that is, there are only few families with over 1 extra adult besides the head adults (see figure 8).

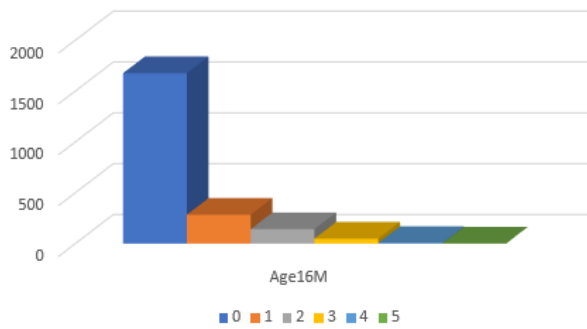


Figure 8 – Distribution of households by number of non-head adults

**FAMINCT:** Figure 9 presents the family income's distribution between 1973 and 1974 range from 0 dollars to 85379 dollars, excluding Mincome's tranfers. However, as we can see the sample is extremely biased to the right so there is no surprise when we observe the average family income was around 11176 dollars per year (see Figure 9).

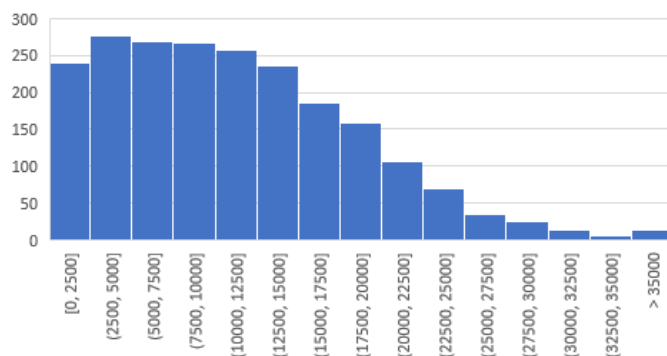


Figure 9 – Family income dispersion

**MHINC:** Across our sample we have incomes for the male head ranging from no income to 28795 USD per year. The sample is clearly biased towards the right, so it is only natural the average male head income is 8553 dollars (see Figure 10).

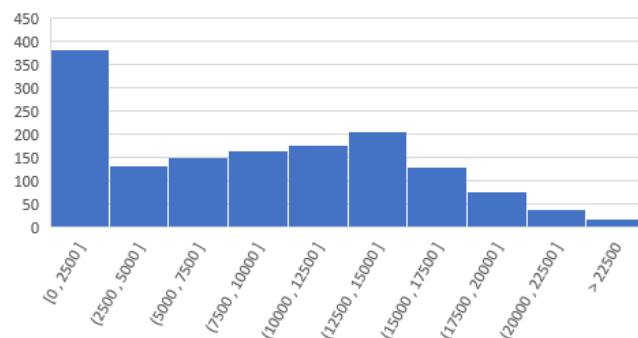


Figure 10 – Male head income distribution



**FHINC:** Across our sample we have incomes for the female head ranging from no income to 22516 USD per year. The sample is clearly biased towards the right, so it is only natural the average female head income is 2569 dollars, much lower than the male head's average income (see Figure 11).

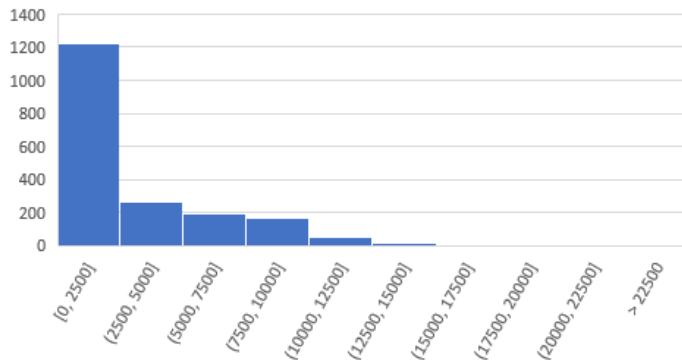


Figure 11 – Female head income distribution

**Treat:** In this experience there were analysed households who were very heterogeneous among themselves. As so there was the need to group them in several categories. There were created 10 categories of households: those who were not entitled no transfer at all, 8 categories with households who were entitled different values of Mincome and finally one category for households who should receive some transfer but did not so that they could work as a control group. These data show us that most of the individuals were not entitled any transfer, 514 because they were not entitled to, while the remnant 442 worked as a control group. It can also be observed that a transfer of 7600USD before family size index correction was by far the most common, even though there was a smaller transfer defined. This happened because one of the main requirements for an u.b.i. policy to work is that the transfer is large enough so that people can stop being poor.<sup>12</sup> (see Figure 12).

<sup>12</sup> For the same reason in 1974 the sixth tier that involved transfers of 5067 USD was eliminated and all the households who were in such tier passed to the seventh one, receiving 6400USD per year.

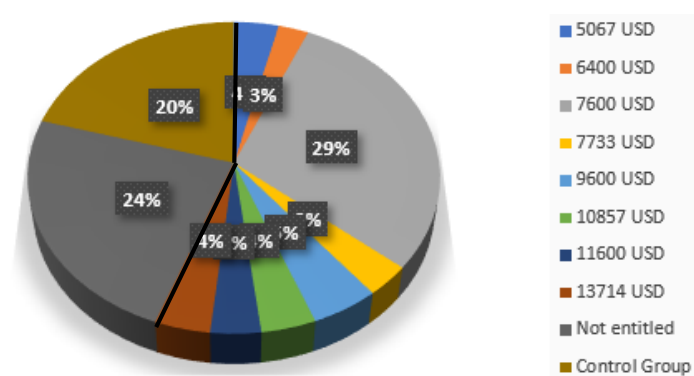


Figure 12 – Type of treatment per household

As households were very heterogeneous, a family size index was defined taking as a basis a family of four members with two children. The idea behind it was that not all families have the same needs, so for the transfer's amount to be defined the correspondent family size index (that we can see in Figure 13) was multiplied by the previously defined treatment amount.

		Number of non-head adults in the household						
		0	1	2	3	4	5	6
Number of family members	1	0.38						
	2	0.71	0.71					
	3	0.88	0.97	0.97				
	4	1.00	1.14	1.23	1.23			
	5	1.10	1.26	1.40	1.49	1.49		
	6	1.20	1.36	1.52	1.66	1.75	1.75	
	7	1.30	1.46	1.62	1.78	1.92	2.01	2.01
	8	1.40	1.56	1.72	1.88	2.04	2.18	2.27
	9	1.45	1.61	1.77	1.93	2.09	2.23	2.32
	10	1.50	1.66	1.82	1.98	2.14	2.28	2.37
	11	1.55	1.71	1.87	2.03	2.19	2.33	2.42
	12	1.60	1.76	1.92	2.08	2.24	2.38	2.47

Figure 13 – Family size index values

Taking this table into account the variable that matters the most is Mincome, that is, to find how much exactly was the transfer each household received.

**Transfer:** In this experience there were provided transfers to households ranging from no transfer provided at all to over 52936USD. However, this sample is widely biased to the right, so it is not strange that the mean transfer provided was around 8152 dollars. It is worth

notice that the index application has increased the average transfer value, what allows us to conclude that higher families were, on average, poorer families in Manitoba (see Figure 14).

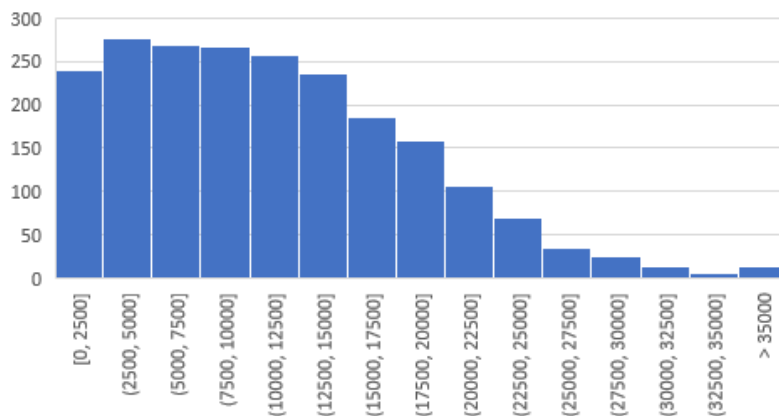


Figure 14 – Distribution of amount received per household

**MHWEEK:** From the total of male heads enrolled in this experience (1468), most of them worked all weeks during the 2 years. However, the second most representative group are males who have work almost no week or even no week at all during the 2 years. On average, a male head has worked 31 weeks per year (see Figure 15).

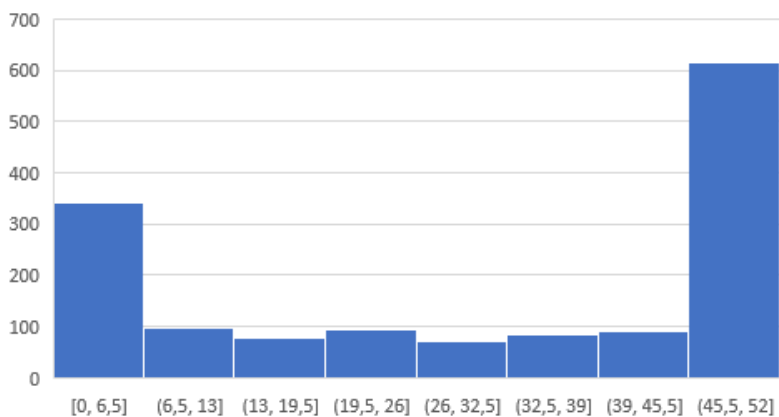


Figure 15 – Average number of weeks worked per year for the male heads

**FHWEEK:** From the total of female heads enrolled in this experience (1911), most of them have not worked a week per year on average. Nonetheless, the second most representative group are women who have worked all weeks during the 2 years. On average, a female head has worked 18 weeks (from the total of 52 that define a year) (see figure 16).

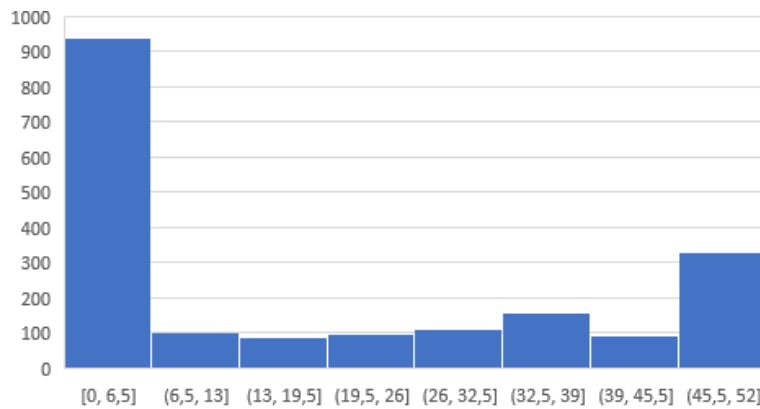


Figure 16 – Average number of weeks worked per year for the female heads

**MHJOBSAT:** From the 1116 male heads who have worked at least one week in the past 2 years almost half of them (537) report to feel somehow satisfied with their current jobs (tier 2). The second higher tier is male heads who feel very satisfied with their current jobs (tier 1). As so we can see that almost all male heads work and, at the same time, the higher amount of them feels, at least, partially satisfied with their jobs (see Figure 17).

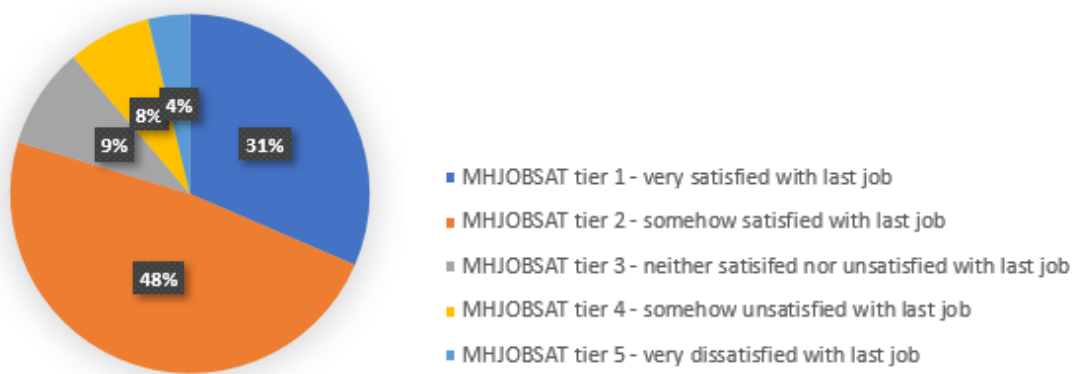


Figure 17 - Male head satisfaction with current job evaluated using a Likert scale

**FHJOBSAT:** From the 916 female heads who have worked at least one week in the past 2 years almost half of them (409) report to be somehow satisfied with their current jobs (tier 2). The second higher tier is female heads who feel very satisfied with their current jobs (tier 1). As so we can see that only a few female heads work but from, those who work, the majority feels at least partially satisfied with their current jobs (see Figure 18).

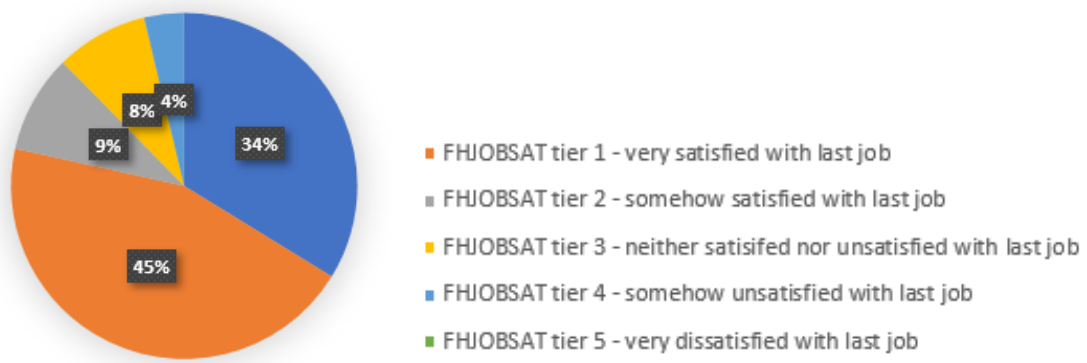


Figure 18 - Female head satisfaction with current job evaluated using a Likert scale

**MHYSCH:** Now when we analyse the 1468 male heads' levels of schooling, even when considering the sample differences, we come down to the conclusion that men tend to be, on average, less schooled but, at the same time, tend to be the ones who have the highest number of post-secondary education attainment. Nonetheless over 25% of them have elementary schooling attainment levels. It cannot be seen in this graph, but the most schooled male head has 24 years of schooling having the average male around 9 years of schooling.

**FHYSCH:** By analysing the 1911 female heads' levels of schooling we come down to the conclusion that a higher number of them has been able to enrol in secondary schooling, whether completing or not. We can also see the number of women with only elementary schooling represents  $\frac{314}{1911} = 0,16$ . It cannot be seen in this graph, but the most schooled female head has 19 years of schooling having the average female less than 9 years of schooling.

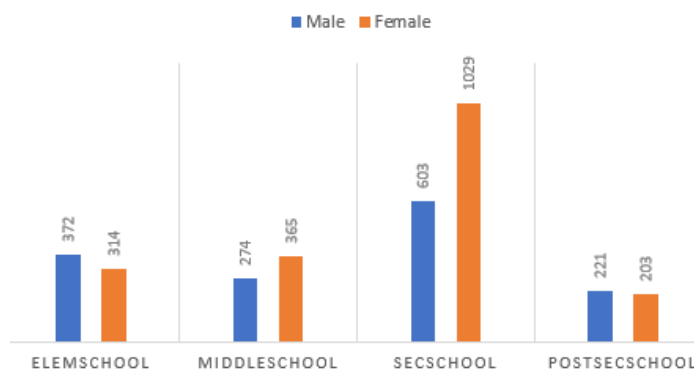


Figure 19 – Distribution of male heads and female heads by levels of schooling

**MHSCH:** From the total of 1468 male heads surveyed, only 130 are currently enrolled in school, that is, approximately 8,88% of the total.

**FHSCH:** From the total of 1911 female heads surveyed, only 123 are currently enrolled in school, that is, approximately 6,41% of the total.

These results come in line with the previously analysed graphs, worth mentioning.

In Annex 1, a detailed definition of all variables is presented while in annex 2 are presented the descriptive statistics for each variable.

## 4.2. Testing the effect of an U.B.I. on the number of weeks worked

### 4.2.1. Male head's case

To test the effect of an u.b.i. on the number of weeks worked by the male head we estimate the following model:

$$MHWEEK_i = \beta_1 + \beta_2 * \log(Transfer)_i + \beta_3 * \log(MHINC)_i + \beta_4 * \log(INCWNMH)_i + \beta_5 * MH\_SCH_i + \beta_6 * FAMSIZE_i + \beta_7 * DHEAD_i + u_i \quad (4.1.)$$

As it is presented in model 4.1., there were chosen six explanatory variables to estimate this model: the variable that interests the most, that is, the amount the household with a male head has received, the amount the male head earns because the more you earn the higher is the incentive for you to work (Marcos and Garcia (2012)), the amount the household is able to earn without the male head's financial contribution, that is a proxy to show us how important the male head is financially speaking, the fact the male is currently enrolled in school or not, because being in school causes the individual's time available to work to decrease, the household dimension because the greater the household the higher is the attention required on the male head to earn money and, finally, a dummy variable for the fact that there is a female head in the household because that decreases the pressure of being the only one who is able to earn money. The continuous variables were used in the logarithmic form because, that way, it is ensured that the econometric analysis becomes easier and that the results become more accurate.

Variables	OLS results
log (Transfer)	-0.0668** (0.0322)
log (MHINC)	1.892*** (0.0262)
log (INCWNMH)	-0.235*** (0.0686)
MH_SCH	-10.16*** (1.398)
FAMSIZE	1.061*** (0.221)
DHEAD	1.892*** (0.0262)
Constant	13.35*** (0.935)
Number of observations	1,468
$R^2$	0.6266
Fobserved	1235.75
p-value	0.0000
Robust standard errors in parenthesis ***p<0.01 **p<0.05 *p<0.1	

Table 1 – Effect of *u.b.i.* on number of hours worked, OLS results for the male sample

This model is statistically globally significant. This model's  $R^2$  is 0,6266, that is, this linear regression computed with the defined variables can explain over 62% of the variations observed in the average number of weeks worked per year by the male head (MHWEEK) values. Taking into consideration that we are using only six explanatory variables we may consider these results to be satisfactory. Moreover, we can see that almost all variables are statistically significant for the conventional significance levels, what is also positive.

According to the model, on average, *ceteris paribus*, an increase of one percent in the transfer made to households causes the number of weeks worked by the male head to decrease by 0.000668 weeks. This coefficient is significant for significance levels of 5% and 10% so the regression shows us that Mincome has effectively caused a significant decrease in the number of weeks worked by male heads: the question is to see whether that effect was due to male heads staying longer in school, improving human capital, or not.

Concerning the other variables, the observed effects were according to what was expected: The number of weeks worked will increase if the male head's income is higher, because wages act as an incentive for people to work more (Rebitzer and Taylor (1995)), if the household has a higher number of members, which requires that the available household's income needs

to be necessarily higher, thus forcing the male head to work more and if there is a female head because some males may feel threatened if they are not the main household earner (Tichenor (2005)). Also, as predicted, male head's number of hours worked will decrease if the male head's importance in family income is lower and if the male head is currently enrolled in school.

#### 4.2.2. Female head's case

To test the effect of an u.b.i. on the number of weeks worked by the female head we estimate the following model:

$$FHWEEK_i = \beta_1 + \beta_2 * \log(Transfer)_i + \beta_3 * \log(FHINC)_i + \beta_4 * \log(INCWNFH)_i + \beta_5 * FH\_SCH_i + \beta_6 * FAMSIZE_i + \beta_7 * DHEAD_i + u_i \quad (4.2.)$$

As we can see on model 4.2. we have used six explanatory variables in our regression's estimation. It can be easily noted that the variables used were in line with the variables used for the male head's case (see point 4.2.1.) so we will pass directly to the regression's analysis.

Variables	OLS results
log (Transfer)	-0.00243 (0.0252)
log (FHINC)	1.671*** (0.0261)
log (INCWNFH)	-0.338*** (0.0528)
FH_SCH	-7.522*** (1.218)
FAMSIZE	0.585*** (0.161)
DHEAD	-3.489*** (0.678)
Constant	21.92*** (0.566)
Number of observations	1.911
$R^2$	0.6787
Fobserved	1007.14
p-value	0.0000
Robust standard errors in parenthesis ***p<0.01 **p<0.05 *p<0.1	

Table 2 – Effect of u.b.i. on number of hours worked, OLS results for the female sample

This model is statistically globally significant. This model's  $R^2$  is 0,6787, that is, this linear regression computed with the defined variables can explain almost 68% the average number



of weeks worked per year by the female head (FHWEEK) values. Taking into consideration that we are using only 6 explanatory variables we may consider these results to be satisfactory. Moreover, we can see that almost all variables are statistically significant for the conventional significance levels, what is also positive. However, the model has a huge down side: the variable that interests us the most, Transfer, that gives respect to the amount transferred from the government to the households, is not significant not even at 10%.

According to the model, on average, *ceteris paribus*, an increase of one dollar in the Mincome amount causes the number of weeks worked by the female head to decrease by 0.0000243 weeks. However, this variable has a p-value of 0,923 that is, it is not significant at all, so we conclude that Mincome doesn't cause the number of hours female heads work to decrease significantly.

Concerning the other variables, the observed effects were according to what was predicted: the number of weeks worked will increase if the female head's income is higher, because wages act as an incentive for people to work more (Rebitzer and Taylor (1995)), if the household has a higher number of members, which requires that the available household's income needs to be necessarily higher, thus forcing the female head to work more and if the female head's financial importance in the household is lower. Also, as predicted, female head's number of hours worked will decrease if the female head is currently enrolled in school and if the household has also a male head member (the reversal situation of Tichenor's theory).

### 4.3. Test Mincome's effect regarding school attendance

#### 4.3.1. Male head's case

To test the effect of an u.b.i. on male head's school attendance we estimate the following model:

$$\begin{aligned}
 MHSCH_i^* = & \beta_1 + \beta_2 * \log(Transfer)_i + \beta_3 * \log(MHINC)_i + \beta_4 * \\
 & \log(INCWNMH)_i + \beta_5 * Age0to5_i + \beta_6 * Age6to15_i + \beta_7 * Age16M_i + \beta_8 * \\
 & DHEAD + u_i ,
 \end{aligned}
 \tag{4.3.}$$

$$MHSCH = \begin{cases} 1 & \text{if } MHSCH^* \geq 0 \\ 0 & \text{if } MHSCH^* < 0 \end{cases}$$

As it is presented in model 4.3., we have chosen seven explanatory variables: the variable that interests the most, that is, the amount the household with a male head has received, the amount the male head earns because the more you earn the lower is the incentive for you to stop working or to reduce your number of working hours, the amount the household is able to earn without the male's head financial contribution, that is a proxy to show us how important the male head is financially speaking, the number of children as well as the correspondent age because the existence of young children causes the probability that someone enrolls in school to decrease (Aslanian (1988) and Lin and Wang (2015)) and finally a dummy variable for the fact that there is a female head in the household because that decreases the pressure of being the only one who is able to earn money.

Variables	Probit results	Marginal Effects
log (Transfer)	0.00584 (0.00493)	0.0008149 (0.0006883)
log (MHINC)	0.0492*** (0.0102)	0.0068654*** (0.0013959)
log (INCWNMH)	0.00479 (0.00836)	0.0006685 (0.0011701)
Age0to5	-0.0449 (0.0664)	-0.0062651 (0.0092522)
Age6to15	-0.117** (0.0512)	-0.016287** (0.0071929)
Age16M	-0.630*** (0.182)	-0.0880307*** (0.0253055)
DHEAD	-0.805*** (0.147)	-0.1124419*** (0.0202842)
Constant	-0.861*** (0.0958)	----- -----
Number of observations	1.468	
Pseudo $R^2$	0.1427	
LR	125.31	
p-value	0.0000	
Robust standard errors in parenthesis ***p<0.01 **p<0.05 *p<0.1		

Table 3 – Effect of u.b.i. on school enrolment, Probit results for the male sample

This model is statistically globally significant. This model's pseudo  $R^2$  is 0,1427, that is, this model can fit the data well. Taking into consideration that we are only using seven explanatory variables we may consider these results to be satisfactory.

As we are dealing with a probit model we know that each coefficient's estimate gives only information regarding the sign of the effect on the probability of MHSCH=1. To obtain the magnitude of the effects associated to each explanatory variable we computed the average marginal effects (see Table 3).

Most of the variables are significant for at least one of the conventional significance levels, which is a model's pro side. Nonetheless, the variable that interest us the most, 'Transfer', isn't significant for none of the above-mentioned situations, what is a model's down side.

According to the model, on average, *ceteris paribus*, an increase of 1% in the Mincome amount causes the probability that the male head enrolls in school to increase by 0.08 percentage points. However, as we can see, the variable has a p-value around 0.2 which, despite not being statistically not significant at all, means that for the conventional significance levels the variable isn't significant so we can't state that the existence of an u.b.i. causes a significant increase in male's schooling attendance.

Concerning the other variables, most of the observed effects were according to what was predicted: The probability that the male head is currently enrolled in school will be higher if the family income without his wage is higher. On the other hand, such probability will be lower if the family has a higher number of members, that, as we have seen, results in a higher pressure for the male to need to earn money and if the household has 2 heads, according with Tichenor's theory.

Regarding the fact that a higher wage increases the probability of the male to enrol in school, both Aslanian (1988) (for master and doctor degrees' study) as Lin and Wang (2015) provide a simple explanation: when people want to make the passage to top jobs, only available for those who were already in high positions, sometimes it is require that they improve their schooling levels. In fact, according to the authors, for males, the need for higher skills to have access to top positions is the main cause for school returning.

#### **4.3.2. Female head's case**

To test the effect of an u.b.i. on female head's school attendance we estimate the following model:

$$FHSCH_i^* = \beta_1 + \beta_2 * \log(Transfer)_i + \beta_3 * \log(FHINC)_i + \beta_4 * \log(INCWNFH)_i + \beta_5 * Age0to5_i + \beta_6 * Age6to15_i + \beta_7 * Age16M_i + \beta_8 * DHEAD + u_i, \quad (4.4.)$$

$$FHSCH = \begin{cases} 1 & \text{if } FHSCH^* \geq 0 \\ 0 & \text{if } FHSCH^* < 0 \end{cases}$$

As we can see on model 4.4. we have used seven explanatory variables in our regression's estimation. It can be easily noted that the variables used were in line with the variables used for the male head's case (see point 4.3.1.) so we will pass directly to the regression's analysis.

Variables	Probit results	Marginal Effects
log (Transfer)	0.000333 (0.00467)	0.0000372 (0.0005216)
log (FHINC)	0.0247*** (0.00564)	0.0027572*** (0.0006379)
log (INCWNFH)	0.0217** (0.00844)	0.0024196** (0.0009351)
Age0to5	-0.261*** (0.0725)	-0.0291085*** (0.0081414)
Age6to15	-0.129** (0.0587)	-0.0144577** (0.0064583)
Age16M	-0.573*** (0.183)	-0.0640628 *** (0.0199227)
DHEAD	-0.472*** (0.107)	-0.0527874 *** (0.0119256)
Constant	-1.124*** (0.0801)	----- -----
Number of observations	1.911	
Pseudo $R^2$	0.1311	
LR	125.31	
p-value	0.0000	
Robust standard errors in parenthesis ***p<0.01 **p<0.05 *p<0.1		

Table 4 – Effect of u.b.i. on school enrolment, Probit results for the female sample

This model's pseudo  $R^2$  is 0,1311, that is, this model can fit the data well. Taking into consideration that we are only using seven explanatory variables we may consider these results to be satisfactory.

As we are dealing with a probit model we know that each coefficient's estimate contains only information regarding the sign of the effect on the probability of FHSCH=1. To obtain the magnitude of the effects associated to each explanatory variable we must proceed to the computation of the average marginal effects (see Table 4).

All variables except one are significant for at least two of the three conventional significance levels, which is a model's pro side. Nonetheless, the variable that interest us the most, Transfer, isn't significant at all, which is a model's huge down side.

According to the model, on average, *ceteris paribus*, an increase of 1% in the Mincome amount, causes the probability that the female head enrolls in school to increase by 0.00372 percentage points. However, this variable has a p-value of 0,943, which means it isn't statistically significant at all so no economical conclusion can be taken from this model's analysis.

Concerning the other variables, most of the observed effects were according to what was predicted: The probability that the female head is currently enrolled in school will be higher if the family income not considering her own income is higher. On the other hand, such probability will decrease if the household has a great number of members and if the household has two heads, possibly for the same reason pointed out by Tichenor for men's case.

Regarding the fact that a higher wage increases the probability that a female head chooses to enrol in school the explanation provided by Aslanian (1988) and Lin and Wang (2015) also holds: despite the fact the existence of a glass ceiling effect that doesn't seem to allow women to achieve top jobs (Bukstein and Gandelman (2019), women are able to have access to those jobs by presenting higher qualifications than the ones the position they are applying to demands (Castagnetti, Rosti, and Toepfer (2018)). Being their only way to have access to those positions it is only natural that the more a female earns, that is, the more qualified her job is, the higher is the probability that she decides to enrol in school.

Finally, as Aslanian (1988) and Lin and Wang (2015) point out females tend to return to school when their children are a bit older because they want to be an example for them or because they feel alone when their children begin to "leave the nest". That is the reason why the effect observed for children between 6 and 15 years old on the probability that a female decides to enrol in school is lower. The same also happens for males but with a much lower magnitude, reason why we haven't mentioned it in the previous section.

In sum, these two models have shown us that the introduction of a universal basic income seems to have caused the number of people enrolled in school to increase. Considering that school enrolment is a proxy for population education, we can say schooling levels may have increase slightly for women and men as a result of a u.b.i.'s introduction.

Despite the fact the effects sign is the same for male heads and female heads, by analysing the values we come down to the conclusion that the effect, if it exists, is much more significant for male rather than for female heads. Even though Transfer isn't significant for any of the cases it must be mentioned that Transfer's p-value in regression 4.3. is 0.236 while Transfer's p-value in regression 4.4. is 0,943.

#### 4.4. Test Mincome's effect regarding people's ability to choose jobs with which they identify most where they do not feel so explored

##### 4.4.1. Male head's case

To test the effect of an u.b.i. on male head's satisfaction with his current job we estimate the following model:

$$MALESAT_i^* = \beta_1 + \beta_2 * \log(Transfer)_i + \beta_3 * \log(MHINC)_i + \beta_4 * \quad (4.5.)$$

$$FAMSIZE_i + u_i,$$

$$MALESAT = \begin{cases} 5 & \text{if } MALESAT^* > a4 \\ 4 & \text{if } a3 < MALESAT^* \leq a4 \\ 3 & \text{if } a2 < MALESAT^* \leq a3 \\ 2 & \text{if } a1 < MALESAT^* \leq a2 \\ 1 & \text{if } MALESAT^* \leq a1 \end{cases}$$

As we can see in model 4.5. there were used three explanatory variables: the variable that interests us the most, that is, the amount the household with a male head has received, the amount the male head earns because higher wages are usually connected with higher satisfaction levels (Marcos and Garcia (2012)) and the family size because the increase in the number of dependents decreases job satisfaction (Bilgic (1998)).

Variables	Ordered Probit results
log (Transfer)	0.00301 (0.00312)
log (MHINC)	-0.0453** (0.0230)
FAMSIZE	-0.0403** (0.0183)
Constant cut 1	-1.220*** (0.221)
Constant cut 2	-0.648*** (0.214)
Constant cut 3	-0.261 (0.213)
Constant cut 4	1.056*** (0.212)
Number of observations	1,116
Pseudo $R^2$	0.0043
LR	12.15
p-value	0.0088
Robust standard errors in parenthesis ***p<0.01 **p<0.05 *p<0.1	

Table 5 – Effect of *u.b.i.* on people's satisfaction with last job, Ordered Probit results for the male sample

This model's pseudo  $R^2$  is 0,043 which, at first view, seems like an incredibly low value with the model not being able to fit the data well. However, if we consider we are dealing with an ordinal probit model and that we are only using three explanatory variables the result becomes acceptable: the proof is that, according with the LR statistic, the model is globally significant for all conventional significance levels, with a p-value really close to zero.

As we are dealing with an ordinal probit model we know that each coefficient's estimate does not correspond to the marginal effects on the probabilities of each outcome. Thus, in Table 6 we refer to the average marginal effects for each outcome.

	Estimates of the average marginal effects of the Ordered Probit model				
Variables	MHJOBSAT=1	MHJOBSAT=2	MHJOBSAT=3	MHJOBSAT=4	MHJOBSAT=5
log (Transfer)	0.0002455 (0.0002554)	0.0003288 (0.0003435)	0.000275 (0.0002843)	0.000215 (0.0002272)	-0.0010642 (0.0011026)
log (MHINC)	-0.0036858* (0.0019484)	-0.0049365* (0.0025328)	-0.0041295* (0.0021149)	-0.0032279* (0.0017671)	0.0159797** (0.0081274)
FAMSIZE	-0.0032781** (0.0015502)	-0.0043905** (0.0020151)	-0.0036728** (0.0016839)	-0.0028708** (0.0013982)	0.0142121** (0.006411)

*Table 6 – Marginal effect of u.b.i. on people's satisfaction with last job, Ordered Probit results for the male sample*

As we can see below only FAMSIZE and log (MHINC) are somehow significant which is a model downside. It gets worse if we consider that Transfer, the variable we are studying, is not significant at all.

According to the model, on average, *ceteris paribus*, an increase of 1% in the Mincome amount, causes the probability that a male head is totally satisfied with his job (MHJOBSAT=1) to increase by 0.02455 percentage points and the probability he ranks his satisfaction as a 2 (meaning he is somehow satisfied with his current job) to increase by 0.03288 percentage points.

Concerning the other variables, the probability that the male is dissatisfied with his job will increase if the household has a higher number of people, particularly infant children.

Harder to explain is the fact that a higher wage level causes the male head's dissatisfaction levels to increase. However, as Clark and Oswald (1996) point out, this is a common result arising from ordered probit models and may be because job satisfaction depends mainly on wage changes rather than the wage as a gross value. This way, as the wages have remained quite stable between the two years, expectations were not met, and workers became dissatisfied. These authors also point out that satisfaction levels tend to decrease with schooling levels, also due to unmet expectations, which, considering that education is positively connected with higher wages, may also contribute to explain the observed phenomena.

#### **4.4.2. Female head's case**

To test the effect of an u.b.i. on female head's satisfaction with her current job we estimate the following model:

$$FEMALESAT_i^* = \beta_1 + \beta_2 * \log(Transfer)_i + \beta_3 * \log(FHINC)_i + \beta_4 * \quad (4.6.)$$

$$FAMSIZE_i + u_i ,$$



$$FEMALESAT = \begin{cases} 5 & \text{if } FEMALESAT^* > a4 \\ 4 & \text{if } a3 < FEMALESAT^* \leq a4 \\ 3 & \text{if } a2 < FEMALESAT^* \leq a3 \\ 2 & \text{if } a1 < FEMALESAT^* \leq a2 \\ 1 & \text{if } FEMALESAT^* \leq a1 \end{cases}$$

Variables	Ordered Probit results
log (Transfer)	0.00359 (0.00346)
log (FHINC)	0.0288** (0.0122)
FAMSIZE	0.0812*** (0.0201)
Constant cut 1	-1.316*** (0.131)
Constant cut 2	-0.694*** (0.123)
Constant cut 3	-0.320*** (0.123)
Constant cut 4	0.905*** (0.124)
Number of observations	916
Pseudo $R^2$	0.0090
LR	21.21
p-value	0.0000
Robust standard errors in parenthesis ***p<0.01 **p<0.05 *p<0.1	

Table 7 – Effect of *u.b.i.* on people's ability to choose jobs that suits them best, Ordered Probit results for the female sample

This model's pseudo  $R^2$  is 0,090 which, at first view, seems like an incredibly low value with the model not being able to fit the data well. However, if we consider we are dealing with an ordinal probit model rather than the usual probit model and that we are only using three explanatory variables the result becomes more acceptable: the proof is that the LR test allows us to conclude the model is globally significant.

As we are dealing with an ordinal probit model we know that each coefficient's estimate does not correspond to the marginal effects on the probabilities of each outcome. Thus, in Table 8, that we can see in Annex 3, we refer to the average marginal effects for each outcome.

As we can see below only FAMSIZE and log (FHINC) are significant which is a model downside (Nonetheless, FAMSIZE is significant at 1, 5 and 10%). It gets worse if we consider that Transfer, the variable we are studying, is not significant at all.

According to the model, on average, *ceteris paribus*, an increase of 1% in the Mincome amount, causes the probability that a female head is totally satisfied with her job (FHJOBSAT=1) to decrease by 0.02947 percentage points and the probability she ranks her job satisfaction as a 2 (meaning is somehow satisfied with job) to decrease by 0.0429 percentage points.

Concerning the other variables, the probability that the female head is satisfied with her last job will decrease if the household has a higher number of people, particularly infant children.

The explanation proposed by Clark and Oswald (1996) allows us once more to understand why an increase in female head's income leads to a decrease in the satisfaction levels but it does not allow us to understand why the effect's magnitude is so high when compared with the male head's case. However, this phenomena can be explained: according to Moore (2006) there are currently two types of women: traditional women and secular women. Traditional women believe that male deserve to earn more even if they perform the same tasks women do and tend to have a higher job satisfaction even though they typically allocate themselves to part-time jobs. On a totally different position arise secular women, that is, women that believe and defend gender equality and who, as so, believe they should be entitled the same amount of money men get when they perform similar tasks. However, as even considering all the differences between genders there is still a part of the difference in gender pay gap that cannot be explained in other way rather than corresponding to discrimination, they will not be able to do as so: the result is that they will tend to report lower satisfaction levels. In Moore (2006) the country that is being analysed is Israel, where the percentage of traditional women is extremely higher than in Canada so we may conclude that in this experiment the higher amount of women were probably secular women. Keeping that in mind, and being aware that the glass ceiling effect defends that there is a bias that does not allow women to have access to top positions, the ones that pay the most (Albrecht, Bjorklund, and Vroman (2003)), we may conclude that the higher are the wages they are entitled the higher will gender pay gap be, thus the least satisfied will women tend to be.

## 5. Conclusion

Exploring data from the Manitoba's experience and using an econometrical approach, we made attempt to test whether u.b.i. has an impact on labor supply, school enrolment and satisfaction with last job.

The results haven't shown us evidence of empirical correlation between u.b.i. and the variables we were studying. However, results seem to point out that u.b.i. allows to increase school enrolment both for male as for female and to increase both male as female head's satisfaction with last job. We consider this variables as poverty proxy's because when you increase someone's income, helping him escaping poverty, you decrease the probability that individual needs to submit himself to contemptuous or dangerous activities and, when you ensure someone doesn't need to stop studying immediately, giving that person the ability to study, you also ensure that we will increase his human capital's level, what will allow him to increase his income, thus stop being poor (what will also allow his future generations to enroll in school and vice-versa) (Tilak (2002)). The results' downside is that u.b.i. also causes a decrease in the number of weeks worked, that can only be partially explained by people choosing to improve human capital levels. It has been observable that u.b.i.'s introduction effects were different for women and men. However, such difference can be explained because of the difference in the percentage of males and females that work.

It becomes important however to mention that these pilot experiments have some limitations such as the fact that they do not allow us to collect information on all important issues. For example, the fact that they consider only the perspective of the net recipients and not the net payers' perspective. It should also be considered that the pilot has a short-term horizon and it is implemented on a small scale while an u.b.i. is meant to be universal as its definition sustains.

Random control tests become impossible hence that people know both the experience's duration as well as the participants.

Finally, even conclusions must be analyzed to see if spurious results have not arisen. Spurious results are conclusions that just simply arise because we are trying to find a connection between a set of variables for too long and that cannot be generalized, simply happened in a specific situation. Note that this does not put at risk the so called "accidents", that is, even from a flawed experience, such as this one, it is possible to establish a relation of causality that will always occur between a given set of variables.

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## 7. Annexes

### 7.1. Annex 1

#### Variables' Description:

DHEAD	=1 if household is a double-headed household =0 if household is a single-headed household or a single-individual household
FAMSIZE	Total number of people that constitutes the household
Age0to5	Number of children aged 1 to 5 years old existent in the household
Age6to15	Number of children aged 6 to 15 years old existent in household
Age16M	Number of people with more than fifteen years old in the household excluding household's head(s)
AGEM	Male head's age in years
AGEF	Female head's age in years
FAMINCT	Total family income between 1973 and 1974 excluding Mincome's transfers. Values in USD
INCWNMH	Family income excluding male head's earnings between 1973 and 1974. Values in USD
INCWNFH	Family income excluding female head's earnings between 1973 and 1974. Values in USD
Transfer	Transfer received between 1973 and 1974. Values in USD
MHWEEK	Average number of weeks the male head has worked per year between 1973 and 1974
FHWEEK	Average number of weeks the female head has worked per year between 1973 and 1974
MHJOBSAT	Male head's satisfaction level with his current job, evaluated based on a Likert scale where 1 is totally dissatisfied and 5 is totally satisfied
FHJOBSAT	Female head's satisfaction level with her current job, evaluated based on a Likert scale where 1 is totally dissatisfied and 5 is totally satisfied
MHYSCH	Current male head's schooling level

FHYSCH	Current female head's schooling level
MH_SCH	=1 if household's male head is enrolled in school =0 if household's male head is not enrolled in school
FH_SCH	=1 if household's female head is enrolled in school =0 if household's female head is not enrolled in school

## 7.2. Annex 2

### Descriptive Statistics:

Variable Name	Number of obs.	Mean	Sd	Min.	Max.
DHEAD	2156	0.57	-----	0	1
FAMSIZE	2156	3.26	2.00	1	12
Age0to5	2156	0.53	0.80	0	5
Age6to15	2156	0.83	1.27	0	8
Age16M	2156	0.35	0.74	0	5
AGEM	1468	36.48	12.65	18	74
AGEF	1911	34.44	12.38	15	65
FAMINCT	2156	11170.87	7632.11	0	85379
INCWNMH	2156	5347.40	5181.07	0	83029
INCWNFH	2156	8893.87	7587.11	0	76102
Transfer	2156	8152.33	9000.58	0	52936
MHWEEK	1468	30,90	21,05	0	52
FHWEEK	1911	18,22	20,27	0	52
MHJOBSAT	1116	2,04	-----	1	5
FHJOBSAT	916	2,04	-----	1	5
MHYSCH	1468	8,65	4,67	0	24
FHYSCH	1911	9,19	3,57	0	19
MH_SCH	1468	0,09	0,28	0	1
FH_SCH	1911	0,07	0,25	0	1

### 7.3. Annex 3

	Estimates of the average marginal effects of the Ordered Probit model				
Variables	FHJOBSAT=1	FHJOBSAT=2	FHJOBSAT=3	FHJOBSAT=4	FHJOBSAT=5
log (Transfer)	-0.0002947 (0.0002869)	-0.000429 (0.0004182)	-0.0003127 (0.0003023)	-0.0002562 (0.0002498)	0.0012926 (0.0012458)
log (FHINC)	-0.0023648** (0.0010459)	-0.0034434** (0.0014817)	-0.0025094** (0.0010844)	-0.0020564** (0.0009707)	0.010374** (0.0043806)
FAMSIZE	-0.0066665*** (0.0017649)	-0.0097068*** (0.0025908)	-0.0070741*** (0.0018988)	-0.005797*** (0.0017744)	0.0292443*** (0.0070758)

*Table 8 – Marginal effect of u.b.i. on people's satisfaction with last job, Ordered Probit results for the female sample*